

US EPA RECORDS CENTER REGION 5



477960

**U.S. ENVIRONMENTAL PROTECTION AGENCY
POLLUTION/SITUATION REPORT
Statoil Eisenbarth Well Response - Removal Polrep
Initial Removal Polrep**



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region V**

Subject: POLREP #1
Initial POLREP
Statoil Eisenbarth Well Response
TBD
Clarington, OH
Latitude: 39.6974000 Longitude: -80.8980000

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Date: 6/29/2014

Reporting Period: June 28, 2014 - June 29, 2014

1. Introduction

1.1 Background

Site Number:	TBD	Contract Number:	
D.O. Number:		Action Memo Date:	
Response Authority:	CERCLA	Response Type:	Emergency
Response Lead:	PRP	Incident Category:	Removal Assessment
NPL Status:	Non NPL	Operable Unit:	
Mobilization Date:	6/28/2014	Start Date:	6/28/2014
Demob Date:		Completion Date:	

CERCLIS ID:**RCRIS ID:****ERNS No.:****State Notification:****FPN#:****Reimbursable Account #:**

1.1.1 Incident Category

Emergency Response - Oil/Gas Well Pad Fire

1.1.2 Site Description

1.1.2.1 Location

The STATOIL Eisenbarth Pad is located at 42240 Long Ridge Road, Clarington, Ohio. The Pad is located in a rural area with approximately 25 residential homes located within 1 mile.

1.1.2.2 Description of Threat

Over 16 different chemicals products were staged on the Pad at the time of the explosion and subsequent fire. Materials present on the Pad included but was not limited to: diesel fuel, hydraulic oil, motor oil, hydrochloric acid, cesium-137 sources, hydrotreated light petroleum distillates, terpenes, terpenoids, isopropanol, ethylene glycol, paraffinic solvents, sodium persulfate, tributyl tetradecyl phosphonium chloride and proprietary components. As a result of fire-fighting efforts and flow back from the well head, significant quantities of water and unknown quantities of products on the well pad left the Site and entered an unnamed tributary of Opossum Creek that ultimately discharges to the Ohio River. Runoff left the pad at various locations via sheet flow as well as by two catch basins located at the northwest and southeast corners of the well pad.

Opossum Creek discharges to the Ohio River 1.7 miles upstream of a public water intake on the West Virginia side of the river. There are also protected species located down stream of the Opossum Creek confluence with the Ohio River.

1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results

The fire and explosion that occurred on the Eisenbarth Well Pad involved more than 25,000 gallons of various products that were staged and/or in use on the site. Upon USEPA arrival at approximately 2000 hours on June 28, 2014, numerous fires continued to burn on the well pad, uncontained run-off was exiting the site and entering an unnamed tributary of Opossum Creek to the south and west and flowback water from the Eisenbarth Well #7 was spilling onto the well pad. Initial air monitoring did not detect any concentrations of volatile organic compounds (VOCs) in the community downwind of the site. Initial inspections in the early hours of June 29, 2014 of Opossum Creek approximately 3.5 miles downstream of the site identified dead fish in the creek.

Initial reports identified the following products were involved and lost in the fire: ~250 gallons of hydrochloric acid (28%), ~7,040 gallons of GasPerm 1000 (terpenes, terpenoids, isopropanol, citrus extract, proprietary components), ~330 gallons of LCA-1 (paraffinic solvents), ~ 1900 gallons of LGC-36 UC (hydrotreated light petroleum

distillate, guar gum), ~1000 gallons of BC-140 (monoethanolamine borate, ethylene glycol), ~3300 gallons of BE-9 (tributyl tetradecyl phosphonium chloride), ~30,000 gallons of WG-36 (polysaccharide gel), ~1,000 gallons of FR-66 (hydrotreated light petroleum distillate), ~9000 gallons of diesel fuel, ~300 gallons of motor and hydraulic oil.

Additionally, there was an inventory of shaped charges, primer cord and detonators on the site as well as three Cesium-137 radiological sources (2-100 millicurie and 1-55 millicurie) with unknown disposition as a result of the fire.

2. Current Activities

2.1 Operations Section

2.1.1 Narrative

On June 28, 2014 at approximately 0900, a fire and a subsequent explosion occurred at the Statoil Eisenbarth Well Pad located at 42240 Long Ridge Road in Clarington, Ohio. Preliminary reports suggests the fire to be the result of a broken hydraulic line that sprayed fluid onto hot equipment igniting it and spreading rapidly resulting in the loss of most of the equipment and chemicals on the pad. Several fire departments responded to the scene. Multiple explosions (estimated to be more than 30) generating shrapnel slowed fire suppression efforts. A 1-mile evacuation notice was issued for the area surrounding the Site affecting 25 residences. At approximately 1900, fire departments ceased fire-fighting efforts and left the scene. A water curtain was maintained, using pump lines on site, to prevent the fire from spreading to a trailer containing 1100 pounds of SP Breaker (an oxidizer), 200 pounds of soda ash and compressed gas cylinders of oxygen (3-2000 lb.), acetylene (2-2000 lb.), propane (6-20 lb.), among miscellaneous aerosol cans. Chemicals not consumed in the fire, water from firefighting efforts and flowback from the well head migrated into rock/soils on the pad and flowed off-site via sheet flow and catch basins located in the northwest and southeast corners of the pad. A minimum of 300,000 gallons of water was sprayed onto the fire as measured from free board drop in the well pads water impoundment.

Responding agencies included but is not limited to: numerous local fire departments, Monroe County Emergency Management Agency (EMA), Ohio Department of Natural Resources Division of Oil and Gas (ODNR), Ohio Environmental Protection Agency (OEPA).

The Eisenbarth Pad is owned by Statoil and Statoil and Halliburton were both on the pad at the time of the incident.

2.1.2 Response Actions to Date

June 28, 2014

Upon arrival, USEPA observed uncontrolled runoff of liquids from the Eisenbarth Well Pad from the south and west sides of the site. Numerous fires were observed across the well pad and a well head was observed releasing flowback water. All runoff from the Site flowed downhill to the south and west and entered an unnamed tributary to Opossum Creek which discharges to the Ohio River. At least 16 different products were present on the well pad and most were lost in the fire. The chemicals present in the aforementioned products included but is not limited to the following: hydrotreated

light petroleum distillates, terpenes, terpenoids, isopropanol, ethylene glycol, paraffinic solvents, sodium persulfate, tributyl tetradecyl phosphonium chloride and proprietary components among others. In addition, three Cesium-137 radiological sources were present on the pad as part of densimeters and shaped charges, primer cord and detonators were present for use in the perforating guns.

USEPA received a request via the National Response Center at 1500 on June 28 to provide air monitoring and sampling support to the USEPA. Upon arrival USEPA, entered into Unified Command with Ohio EPA and Statoil and observed uncontrolled discharge from the Site from the water curtain and the wellhead and small areas of fire. The fire had largely burned itself out except for the composite/plastic work pads on the Site. Air monitoring was initiated around the well pad and in residential areas. No readings above background was detected in the residential areas. Immediately downwind of the well pad a reading of 1.2 ppm was obtained for VOCs using a MultRAE Pro, a 0.05 ppm using an UltraRAE with benzene tube, background readings using a Ludlum 192 and pH of 5-6 using pH paper. Based on air monitoring results, the initial evacuation was lifted with the exception of two residents located within 200 yards of the well pad. Two samples of runoff from the well pad were collected and subsequent analysis revealed the presence of VOCs.

The Statoil mobilized resources for air and water sampling, containment and recovery of spilled materials. Air and water sampling was initiated and an interceptor trench was begun on the south side of the well pad in an attempt to contain runoff from the site. Equipment was mobilized to begin constructing an earthen berm to contain runoff and to flood the pad to extinguish remaining fires. One individual was transported to a local hospital for treatment for heat exhaustion.

Priorities actions were set as: extinguish fires, contain runoff from the site and gain control/secure the release of flowback water from the well head.

June 29, 2014

Unified Command was established and comprised of on-site representatives from USEPA, OEPA and Statoil.

At approximately, 0030 the well head was "shut-in" ceasing the release of flowback water onto the well pad. An air sample was collected immediately downwind of the well pad fires and subsequent analysis revealed detections of several volatile organic compounds but at low concentrations. Fires near the trailer containing the gas cylinders and the water curtain were extinguished. Due to the cessation of runoff from the Site and safety issues with the construction of the trench activities, the trench construction was halted until daylight. The western and southern slopes of the well pad have previously failed and consultation with a civil engineer was warranted before additional working of the slopes continued.

Inspection of the creek downstream of the incident identified evidence of a fish kill. OEPA notified ODNR Division of Wildlife and they responded and began an investigation of the fish kill by identifying and walking the length of the impacted surface waters.

USEPA collected two water samples from Opossum Creek approximately 3.5 miles downstream of the well pad.

Statoil worked to extinguish remaining fires with assistance from Clarington Volunteer Fire Department. Once fires were extinguished, construction of a berm near the pad was begun to contain spilled liquids and future runoff from the well pad. Construction of a siphon dam near a ditch line leading to the southeast catch basin to contain spilled fluids and prevent off-site migration. Wild Well Control assessed the well head for leaks and determined that it was "shut-in" and no leaks were apparent.

Routine air monitoring and sampling was initiated by the RP in work areas and in residential areas. Air is being monitored for volatile organic compounds (VOCs), hydrogen sulfide (H₂S), sulfur dioxide (SO₂), benzene, Lower Explosive Limit (LEL), acid gases and dust (total, respirable, PM₁₀ and PM_{2.5}). Background readings resulted in the lifting of the evacuation of the two remaining homes. Water sampling and monitoring was initiated by the RP of areas downstream of the well pad. Field measurements for pH, dissolved oxygen, specific conductance were all normal.

Radiological surveys were conducted on and around the pad to ascertain the status of the three Cesium-137 sources on Site using a Ludlum 192. All readings were background from 6-11 microrem/hr.

Worked as halted due to concerns on the status of the densometers. Notice was given to the Ohio Department of Health Bureau of Radiation Protection on the status of the densometers. Additional surveys of the area around the pad were conducted using a Ludlum 192 and surveys were conducted of the boots of people exiting the exclusion zone using a 2241-2 with a 44-9 probe. All readings on the 192 continued to be background as well as the 2241-2 readings staying with background ranges from 29-51 counts per minute. Surveys will continue until the integrity of the Cesium sources can be verified by Halliburton. Plans evaluate the sources for integrity were suspended due to lightning.

There was concern over the ability to analyze for and detect the primary component of BE-9 [tributyl tetradecyl phosphonium chloride (TTPC)] for which there is no approved standard method to detect. In consultation with ATSDR, an industry method was obtained and shared with CTEH (Statoil's environmental consultant) to work with a laboratory to develop a method to analyze for TTPC in environmental media.

Air and Environmental Monitoring and Sampling Plans were developed. Sample parameters are as follows:

Air Samples: VOCs, polyaromatic hydrocarbons (PAHs) and, as needed, silica dust

Water, Sediment and Soil Samples: VOCs, SVOCs, chlorides, cations/anions and total petroleum hydrocarbons (TPH) and ethylene glycol

If a method is developed to analyze for TTPC this will be added to the list, as well as any methods necessary to detect any of the constituents that make up the proprietary component of GasPerm 1000.

Air samples in the community were all non-detect for VOCs.

Water samples of runoff indicated the presence of TPH, 2-butanone, acetone, benzene, ethylbenzene, xylenes, toluene, bis(2-ethylhexyl)phthalate, phenanthrene, pyrene, phenol, and chlorides. Surface water sampling results indicated the presence of TPH, acetone, o-Cresol, bis(2-ethylhexyl)phthalate and chlorides downstream of the well pad.

June 30, 2014

Unified Command Meeting: USEPA, OEPA, Statoil

The densometers were evaluated by Halliburton for integrity and leaks. The sources were found to be intact and shielding still in place. Readings taken at the surface of the densometers were found to be within appropriate ranges of 0.3-0.5 millirem/hr and background at one meter distance. Wipe tests from surfaces of each densometer also came back at background concentrations. ODH's Bureau of Radiation Protection requested notification prior to recovery and shipment of the densometers.

Statoil continued construction of the containment berm currently 80% complete. Work was halted for an inspection and to address concerns expressed by ODNR Oil & Gas in regards to potential explosives, cylinders and remaining chemicals on the well pad. ODNR Division of Oil & Gas was incorporated into Unified Command.

An assessment was conducted of the well pad for explosive shape charges, detonators and primer cord in order to prepare a work plan to recover them prior beginning any other recovery operations on the well pad. Several areas on the pad rekindled and operations were halted until the fires could be extinguished.

ODNR Division of Wildlife completed their in stream assessment of the fish kill and reported an estimated 70,000 dead fish from an approximately 5 mile stretch extending from the unnamed tributary just west of the Eisenbarth Well Pad to Opossum Creek just before its confluence with the Ohio River. No fish kills were reported on the Ohio River.

Water samples of runoff indicated the presence of TPH, 2-butanone, acetone, benzene, xylenes, toluene, bis(2-ethylhexyl)phthalate, 1-methylnaphthalene, 2-methylnaphthalene, o-Cresol, m&p Cresol, naphthalene, phenol, and chlorides. Surface water sampling results indicated the presence of TPH, acetone, bis(2-ethylhexyl)phthalate, phenol and chlorides downstream of the well pad.

July 1, 2014

Unified Command Meeting: USEPA, OEPA, ODNR Oil & Gas, Statoil

Explosives on the well pad were evaluated and recovered for transportation off-site by Horizontal. Halliburton assessed the pad to ascertain the condition and quantities of remaining chemicals present. Fires continued to rekindle and Clarrington Volunteer Fire Department was mobilized to assist in extinguishing them.

Due to the unknown cause of the fish kill, the potential for them to be scavenged and the large volume of decaying biomass having a continued negative impact on the creek, it was determined that recovery of the dead fish would be needed. US Fish and Wildlife Service (USFWS) arrived to evaluate the creek and concurred with the plan to recover dead fish and advised that there were no endangered or threatened species in the creek but the stream was a high quality habitat.

Air and water sampling continued. Water quality measurements were normal.

Air samples in the community were all non-detect for VOCs. Surface water sampling results indicated the presence of TPH, acetone, bromodichloromethane, chloroform, bis(2-ethylhexyl)phthalate and chlorides downstream of the well pad.

July 2, 2014

Unified Command Meeting: USEPA, OEPA, Statoil

Assessment of chemicals remaining on the well pad was completed. The earthen berm around the pad was completed, however the eastern side of the berm could not be keyed into native soils and could allow migration beneath. As a result, the southeast and northwest catch basins were plugged and converted to recovery sumps. The removal and transportation off-site of the densometers was completed.

Fires continued to rekindle on the pad and spread. Several options were evaluated and Statoil worked with Monroe County EMA to smother the fire with earthen material.

Recovery of dead fish from the creek began. The impacted area was divided into 4 divisions and would be walked and all dead aquatic life would be collected, counted and speciated and retained on-site. Access points would be identified and documented for rehabilitation if necessary. USFWS advised to minimize removal of any vegetation along the riparian zone and not to remove trees with bore sizes greater than 3 inches.

Air, water and sediment sampling continued. Water quality measurements indicated a lowering in the dissolved oxygen likely due to the decaying dead fish. Air results remain non-detect in the community.

Water and sediment sample results pending.

July 3, 2014**Unified Command Meeting: USEPA, OEPA, ODNR Oil & Gas, Statoil**

Halliburton removed some chemicals from the pad today including the SP Breaker (oxidizer) and soda ash.

Hot spots on the well pad continue to smolder and are addressed as needed if open flames are observed. The tank full of WG-36 also continues to burn. Plans to extinguish it are being developed.

Work was again halted on the pad after an inventory reconciliation determined that additional explosives remained somewhere on the pad. All 5 missing "barrels" were located and removed by Horizontal.

Plans to assess surround drinking water wells are being developed. Statoil has previously sampled all wells within 5,000 feet of well head prior to commencing operations.

OEPA and USEPA were provided, by Halliburton, the constituents of the proprietary component of GasPerm 1000. Evaluation of these constituents indicates that current analytical techniques being used with the addition of reporting tentatively identified compounds (TICs) will be sufficient for assessing off-site impacts.

Fish recovery efforts continued on the unnamed tributary to Opossum Creek and Opossum Creek. Fish, crayfish and salamanders are being recovered.

Air, water and sediment sampling continued. Water quality measurements indicated a lowering in the dissolved oxygen likely due to the decaying dead fish.

Air, water and sediment sample results pending.

July 4, 2014**Unified Command Meeting: USEPA, OEPA, Statoil**

Halliburton began unloading the remaining quantity of FR-66 from the tanker truck. A leak was detected in the bottom valve on the tank. Halliburton also removed remaining totes of BC-140 and remaining chemicals on the pad with the exception of compressed gas cylinders. Migration pathways off the well pad are being evaluated and a plan to assess them developed.

Four areas of smoldering material were observed on the well pad. Three areas were inaccessible and will be monitored. One area was smothered with sand.

The well heads underwent metallurgical testing to evaluate their integrity. Field testing and inspection indicated that the well heads were intact and uncompromised. The release from Well #7 was the results of a failure of the lubricator head and not a deficiency of the well head itself.

Fish collection continued.

Air and water sampling continued. Water quality measurements indicated a return to normal ranges of dissolved oxygen. Air monitoring within the community is all non-detect.

Air and water sample results pending.

July 5, 2014

Unified Command Meeting: USEPA, OEPA, Statoil

Due to space constraints on the well pad, arrangements were made to remove three large trailers, not involved in the fire, from the well pad. These trailers require permits for over road travel and OEPA coordinated escorts by Ohio State Troopers.

Other non-essential vehicles were removed from the well pad including a fuel truck containing 1,100 gallons of diesel fuel. Monroe County EMA was on site with a thermal camera to identify hot spots. No additional areas of significant concern were noted. Only 4 areas where only tires remained were noted. These areas will be monitored and addressed as needed. The burning tank containing WG-36 was smothered by pumping Barite (barium sulfate) into the top of the tank. External temperatures dropped throughout the day. Halliburton continued to recover FR-66 from the tanker truck and from pooled areas against the southeast corner of the earthen berm. Additionally, due to significant amounts of water being collected in the northwest catch basin, 24 hour vac truck operations have been on going.

Plans to begin assessing subsurface migration pathways to the south and west of the well pad were delayed due to underground utility marking issues. Soil sampling and geoprobing will begin tomorrow.

Fish collection was completed. In total, 11,116 dead fish were collected (20 different species), 3,519 crustaceans, 7 frogs and 20 salamanders. Due to the warm weather, number of days the fish were in the creek, scavenging, etc., the fish recovered were in advanced states of decomposition. Following the removal of this biomass, in stream dissolved oxygen readings began to return to normal after several days of low readings.

A visual inspection of the creek by USEPA and OEPA noted continued presence of some dead fish. Also noted was the presence of minnows and small mouth bass in portions of the creek. Caddisflies, mayflies and a dobsonfly larvae (of significant size)

was noted in the lower reaches of Opossum Creek. Also, algae and snails were also noted returning to the creek.

Air and water sampling continued. Water quality measurements returning to normal ranges for dissolved oxygen. Air monitoring within the community was discontinued.

Air and water sample results pending.

2.1.3 Enforcement Activities, Identity of Potentially Responsible Parties (PRPs)

Pending

2.2 Planning Section

2.2.1 Anticipated Activities

2.2.1.1 Planned Response Activities

Develop plan to isolate the well bore.

Develop assessment plan to evaluate migration pathways off-site from the pad into surface waters and surface and subsurface soils and delineate impacted media on and off the well pad.

Ecological assessment of impact of runoff onto the unnamed tributary of Opossum Creek and Opossum Creek.

Remediation plan on-site and off-site impacts soils, groundwater and surface waters.

2.2.1.2 Next Steps

Pending

2.2.2 Issues

None at this time

2.3 Logistics Section

N/A

2.4 Finance Section

N/A

2.5 Other Command Staff

N/A

3. Participating Entities

3.1 Unified Command

U.S. Environmental Protection Agency

Ohio Environmental Protection Agency

Statoil

Ohio Department of Natural Resources Division of Oil and Gas

3.2 Cooperating Agencies

Monroe County Emergency Management Agency

Clarington Volunteer Fire Department

ODNR Division of Wildlife

U.S. Fish and Wildlife Service

ATSDR

Ohio State Troopers

4. Personnel On Site

No information available at this time.

5. Definition of Terms

No information available at this time.

6. Additional sources of information

6.1 Internet location of additional information/report

Pending

6.2 Reporting Schedule

Pending

7. Situational Reference Materials

No information available at this time.